



US006271359B1

(12) **United States Patent**
Norris et al.

(10) **Patent No.:** US 6,271,359 B1
(45) **Date of Patent:** Aug. 7, 2001

(54) **TISSUE-SPECIFIC AND PATHOGEN-SPECIFIC TOXIC AGENTS AND RIBOZYMES**

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(57) ABSTRACT

The present invention relates to the discovery, identification and characterization of toxic agents which are lethal to pathogens and methods for targeting such toxic agents to a pathogen or pathogen infected cells in order to treat and/or eradicate the infection. In particular, the present invention relates to toxic agents which target bacteria at different stages of the bacterial life cycle, which are delivered alone or in combination to bacteria or bacteria-infected cells. The invention relates to toxic agents which are lethal to diseased cells and methods for targeting such toxic agents to a diseased cell in order to treat and/or eradicate the disease. The present invention relates to promoter elements which are pathogen-specific or tissue-specific and the use of such promoter elements to achieve pathogen-specific or tissue-specific expression of the toxic agent(s) and/or ribozyme(s) of the present invention. Specifically, the invention relates to the delivery of one or more toxic gene products, antisense RNAs, or ribozymes, or combination thereof. The invention provides a novel system by which multiple pathogenic targets may be simultaneously targeted to cause the death of a pathogen, or cell infected with a pathogen. Further, the invention has important implications in the eradication of drug-resistant bacterium and bacterial pathogens. The invention provides a novel system by which multiple targets may be simultaneously targeted to cause the death of a diseased cell. The invention also has important implications in the eradication of drug-resistant pathogens and drug-resistant diseased cells (such as cancer cells).

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/291,902**

(22) Filed: **Apr. 14, 1999**

(51) Int. Cl.⁷ **C07H 21/02**; C07H 21/04; C12N 15/00

(52) U.S. Cl. **536/23.1**; 536/24.1; 536/24.3; 536/24.5; 435/320.1

(58) Field of Search 435/6, 7.2, 7.32, 435/91.1, 91.31, 91.4, 235, 375, 320.1; 536/23.1, 24.1, 24.3, 24.5; 514/44

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8 Claims, 5 Drawing Sheets

